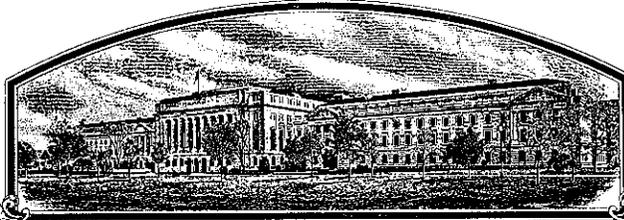


No.

9000167



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Northrup King Co.

Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'S43-34'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this 31st day of March in the year of our Lord one thousand nine hundred and ninety-two.

Attest:

Kenneth H. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Edward Madison
Secretary of Agriculture



U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) Northrup King Co.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO. X8942, J426472	3. VARIETY NAME S43-34
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) P. O. Box 959 Minneapolis, MN 55440		5. PHONE (Include area code) 612-593-7333	FOR OFFICIAL USE ONLY PVPO NUMBER <div style="font-size: 2em; font-weight: bold; margin: 5px 0;">9000167</div> F I L I N G Date <u>May 4, 1990</u> Time <input type="checkbox"/> A.M. <input type="checkbox"/> P.M. F E E S Filing and Examination Fee: \$ <u>2150</u> Date <u>May 4, 1990</u> R E C E I V E D Certificate Fee: \$ <u>250.</u> Date <u>Feb. 13, 1992</u>
6. GENUS AND SPECIES NAME Glycine max	7. FAMILY NAME (Botanical) Leguminosae	8. CROP KIND NAME (Common Name) Soybean	
9. DATE OF DETERMINATION September, 1987		10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation	
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Delaware	12. DATE OF INCORPORATION 1976		
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Robert W. Romig Northrup King Co. P. O. Box 959 Minneapolis, MN 55440 PHONE (Include area code): 612-593-7305			

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)

- a. Exhibit A, Origin and Breeding History of the Variety
- b. Exhibit B, Novelty Statement.
- c. Exhibit C, Objective Description of Variety.
- d. Exhibit D, Additional Description of Variety.
- e. Exhibit E, Statement of the Basis of Applicant's Ownership.
- f. Seed Sample (2,500 viable untreated seeds) Date Seed Sample mailed to Plant Variety Protection Office _____
- g. Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.)

YES (If "YES," answer items 16 and 17 below) NO (If "NO," skip to item 18 below)

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?

YES NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?

FOUNDATION REGISTERED CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?

YES (If "YES," through Plant Variety Protection Act Patent Act Give date _____.)

NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?

YES (If "YES," give names of countries and dates)

NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT (Owner(s)) 	CAPACITY OR TITLE <u>Vice President, Research</u>	DATE <u>May 2, 1990</u>
SIGNATURE OF APPLICANT (Owner(s))	CAPACITY OR TITLE	DATE

EXHIBIT A

Origin and Breeding History of the Variety

The soybean variety 'S43-34' is derived from the cross 'Fayette' (3) x 'S1492'. The soybean research group at St. Joseph, Illinois made the cross S1492 x Fayette in 1981, the first backcross to Fayette at the Northrup King Research Center at Waimea, Kauai, Hawaii, in February of 1982, and the second backcross to Fayette at St. Joseph in 1982. The BC2 F1 and F2 were grown at Waimea in the winter of 1982-83, and the F3 at St. Joseph in 1983. The F2 was advanced by harvesting 2-4 pods from each plant. In October, 1983, 100 random plants were harvested and threshed individually. The seed of these plants was grown in F4 progeny rows in 1984. One of these, numbered J426472, was selected based on agronomic appearance to be tested in a preliminary yield trial in 1985. This line was subsequently named S43-34. It has been tested at several midwest locations from 1986-1989 and found to yield well in comparison to other cyst nematode (Heterodera glycines) resistant varieties of similar maturity. Descriptive traits including white flowers, grey pubescence, tan pods and buff hilum have been identified and confirmed. S43-34 has been tested for resistance to cyst nematode in infested fields near Conesville, Iowa and Champaign, Illinois (predominantly Race 3) and in greenhouse tests at the Northrup King Research Centers at Stanton, Minnesota and Bay, Arkansas (Race 4). It has consistently tested resistant to both races. This resistance was confirmed by USDA nematologist, Dr. Lawrence Young, at Jackson, Tennessee. It has been tested for reaction to Phytophthora megasperma and found to be susceptible.

In the winter of 1986-87 300 seeds were planted at Waimea. At harvest, 100 plants were threshed individually and their progeny planted at St. Joseph in 1987 to monitor within variety variability and to produce Pedigree Seed. The increase block was carefully rogued during the growing season and except for a few off-type plants assumed to have resulted from admixture or outcrossing, all rows were uniform so they were bulked to produce Pedigree Seed. This seed was planted to produce Breeder Seed in 1988. The increase block was rogued at flowering and prior to harvest and found to be uniform.

Foundation Seed of S43-34 was grown in 1989. The Iowa Crop Improvement Association inspected the fields and found them to meet the standards for Foundation Seed. The National Soybean Variety Review Board approved the variety for Certification on December 7, 1989.

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S43-34 is a stable and uniform variety except that it may contain up to 2% seed with hilum color other than buff. In six years of testing and 3 cycles of seed increase, no variants other than environmental variation normally encountered in any soybean variety has been observed.

Varietal purity will be maintained by use of progeny rows as needed.

EXHIBIT B

Novelty Statement For the Variety

Soybean variety S43-34 is most similar to S42-50 and Fayette. It can be differentiated from S42-50 on the basis of pod color and resistance to (Heterodera glycines Races 3 and 4 of cyst nematode. S43-34 has tan pods and is resistant to Races 3 and 4 of cyst nematode; S42-50 has brown pods and is susceptible. S43-34 can be differentiated from Fayette on the basis of pubescence color and hilum color. S43-34 has grey pubescence and buff hila; Fayette has tawny pubescence and black hila.

U.S. DEPARTMENT OF AGRICULTURE
 AGRICULTURAL MARKETING SERVICE
 LIVESTOCK, MEAT, GRAIN & SEED DIVISION
 PLANT VARIETY PROTECTION OFFICE
 BELTSVILLE, MARYLAND 20705

EXHIBIT C
 (Soybean)

OBJECTIVE DESCRIPTION OF VARIETY
 SOYBEAN (*Glycine max* L.)

NAME OF APPLICANT(S) Northrup King Co.	TEMPORARY DESIGNATION	VARIETY NAME S43-34
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) P. O. Box 959 Minneapolis, MN 55440 Attention: R. W. Romig		FOR OFFICIAL USE ONLY PVPO NUMBER 9000167

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.,).

1. SEED SHAPE:



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)
 3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)

2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)
 4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

2. SEED COAT COLOR: (Mature Seed)

1 = Yellow 2 = Green 3 = Brown 4 = Black 5 = Other (Specify) _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

1 = Dull ('Corsoy 79'; 'Braxton') 2 = Shiny ('Nebsoy'; 'Gasoy 17')

4. SEED SIZE: (Mature Seed)

Grams per 100 seeds

5. HILUM COLOR: (Mature Seed)

1 = Buff 2 = Yellow 3 = Brown 4 = Gray 5 = Imperfect Black 6 = Black 7 = Other (Specify) _____

May contain up to 2% other hilum color.

6. COTYLEDON COLOR: (Mature Seed)

1 = Yellow 2 = Green

7. SEED PROTEIN PEROXIDASE ACTIVITY:

1 = Low 2 = High

8. SEED PROTEIN ELECTROPHORETIC BAND:

1 = Type A (SP^{1a}) 2 = Type B (SP^{1b})

9. HYPOCOTYL COLOR:

1 = Green only ('Evans'; 'Davis') 2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')
 3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')
 4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

10. LEAFLET SHAPE:

1 = Lanceolate 2 = Oval 3 = Ovate 4 = Other (Specify) _____

11. LEAFLET SIZE:

- 2 1 = Small ('Amsoy 71'; 'A5312') 2 = Medium ('Corsoy 79'; 'Gasoy 17')
 3 = Large ('Crawford'; 'Tracy')

12. LEAF COLOR:

- 1 1 = Light Green ('Weber'; 'York') 2 = Medium Green ('Corsoy 79'; 'Braxton')
 3 = Dark Green ('Gnome'; 'Tracy')

13. FLOWER COLOR:

- 1 1 = White 2 = Purple 3 = White with purple throat

14. POD COLOR:

- 1 1 = Tan 2 = Brown 3 = Black

15. PLANT PUBESCENCE COLOR:

- 1 1 = Gray 2 = Brown (Tawny)

16. PLANT TYPES:

- 2 1 = Slender ('Essex'; 'Amsoy 71') 2 = Intermediate ('Amcor'; 'Braxton')
 3 = Bushy ('Gnome'; 'Govan')

17. PLANT HABIT:

- 3 1 = Determinate ('Gnome'; 'Braxton') 2 = Semi-Determinate ('Will')
 3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

18. MATURITY GROUP:

- 7 1 = 000 2 = 00 3 = 0 4 = I 5 = II 6 = III 7 = IV 8 = V
 9 = VI 10 = VII 11 = VIII 12 = IX 13 = X

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

BACTERIAL DISEASES:

- Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)
 1 Bacterial Blight (*Pseudomonas glycinea*)
 Wildfire (*Pseudomonas tabaci*)

FUNGAL DISEASES:

- 1 Brown Spot (*Septoria glycines*)
 Frogeye Leaf Spot (*Cercospora sojina*)
 1 Race 1 1 Race 2 1 Race 3 1 Race 4 1 Race 5 Other (Specify)
 Target Spot (*Corynespora cassicola*)
 Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)
 Powdery Mildew (*Microsphaera diffusa*)
 2 Brown Stem Rot (*Cephalosporium gregatum*) (Horizontal resistance based on field observation)
 Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)



19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

FUNGAL DISEASES: (Continued)

Pod and Stem Blight (*Diaporthe phaseolorum* var; *sojae*)

Purple Seed Stain (*Cercospora kikuchii*)

Rhizoctonia Root Rot (*Rhizoctonia solani*)

Phytophthora Rot (*Phytophthora megasperma* var. *sojae*)

Race 1 Race 2 Race 3 Race 4 Race 5 Race 6 Race 7

Race 8 Race 9 Other (Specify) _____

VIRAL DISEASES:

Bud Blight (Tobacco Ringspot Virus)

Yellow Mosaic (Bean Yellow Mosaic Virus)

Cowpea Mosaic (Cowpea Chlorotic Virus)

Pod Mottle (Bean Pod Mottle Virus)

Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

Soybean Cyst Nematode (*Heterodera glycines*)

Race 1 Race 2 Race 3 Race 4 Other (Specify) _____

Lance Nematode (*Hoplolaimus Colombus*)

Southern Root Knot Nematode (*Meloidogyne incognita*)

Northern Root Knot Nematode (*Meloidogyne Hapla*)

Peanut Root Knot Nematode (*Meloidogyne arenaria*)

Reniform Nematode (*Rotylenchulus reniformis*)

OTHER DISEASE NOT ON FORM (Specify): _____

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

Iron Chlorosis on Calcareous Soil

Other (Specify) _____

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

Mexican Bean Beetle (*Epilachna varivestis*)

Potato Leaf Hopper (*Empoasca fabae*)

Other (Specify) _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

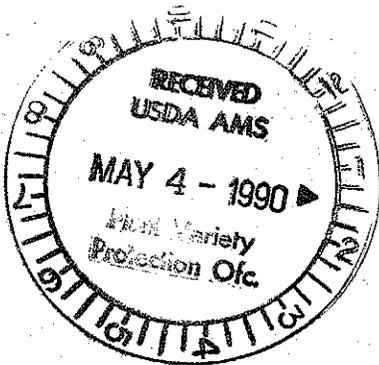
CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	S42-50	Seed Coat Luster	Fayette
Leaf Shape	Pioneer 9442	Seed Size	Williams 82
Leaf Color	Fayette	Seed Shape	S1492
Leaf Size	S44-77	Seedling Pigmentation	S1492

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/POD
				CM Width	CM Length	% Protein	% Oil		
S43-34 Submitted	136	1.9	97	6.9	10.9	39.8	20.2	14.3	2-3
Fayette Name of Similar Variety	133	2.6	107	7.0	11.5	41.2	20.3	13.7	2-3

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A₂ in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.



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EXHIBIT D

Additional Description of the Variety

Soybean variety S43-34 is an early to mid Group IV cultivar maturing about the same as S44-77. It exhibits normal tolerance to metribuzin herbicide.

EXHIBIT E

Statement of the Basis of Applicant's Ownership

Soybean variety S43-34 was developed by the Northrup King Co. soybean breeding staff from germplasm sources cited in Exhibit A of this application. Northrup King Co. believes that the variety is novel as defined in the Plant Variety Protection Act and, therefore, that Northrup King Co. is the sole owner of the variety.